



BRAIN INTERNATIONAL SCHOOL

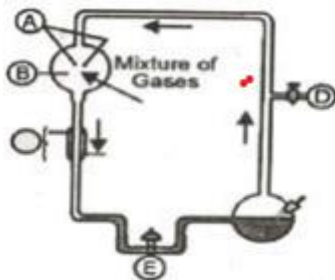
SESSION 2024-25

CLASS: XII

REVISION- SHEET

SUBJECT: BIOLOGY (044)

1. Which one of the following is not a major component of the ecosystem?
 - a) Decomposition
 - b) Energy flow
 - c) Stratification
 - d) Nutrient cycling
2. MTP (Medical Termination of Pregnancy) is considered safe upto how many weeks of pregnancy?
 - a) Japan
 - b) Rio-de Janeiro
 - c) South Africa
 - d) Johannesburg
3. The earth summit (1992) was held at:
 - a) Corovira
 - b) Sapindus
 - c) Spermacid
 - d) Consap
4. Name the spermicidal cream developed by Central Drug Research Institute (Lucknow), India.
 - a) 37
 - b) 17
 - c) 24
 - d) 27
5. How many documented varieties of Basmati rice are grown in India?
 - a) Methane and nitric oxide
 - b) Methane, nitrogen and hydrogen
 - c) Methane and carbon monoxide
 - d) Methane and carbon dioxide
6. Biogas, produced by fermentation of manure, sewage, cattle dung, etc., predominantly comprises:
 - a) X
 - b) Y
 - c) O
 - d) Z
7. What was the resultant found in the place marked E?



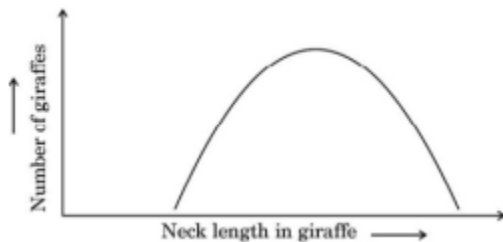
- a) Glucose, fatty acids and lipids
- b) Some fatty acids and organic acids

c) Some amino acids as glycine and alanine d) Organic esters only

8. The detritus food chain begins with:

- a) Primary consumers b) Primary producers
- c) Dead organic matter d) Secondary consumers

9. Select the option that gives the correct description of the process of Natural Selection with respect to the length of the neck of giraffe.



- a) Stabilising selection as giraffes with medium neck lengths are selected.
- b) Directional selection as giraffes with longer neck lengths are selected.
- c) Stabilising selection as giraffes with longer neck lengths are selected further.
- d) Disruptive selection as giraffes with smaller and longer neck lengths are selected.

10. For retting of jute, the fermenting microbe is:

- a) Butyric acid bacteria b) Methanophilic bacteria
- c) Helicobacter pylori d) Streptococcus lactis

11. Which one is not a side effect due to the regular use of contraceptive methods.

- a) Breast cancer b) AIDS
- c) Abdominal pain d) Nausea

12. Choose the pair that is incorrectly matched.

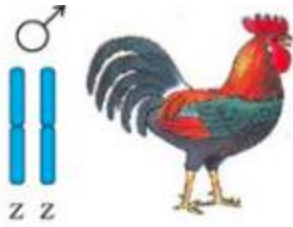
- a) Khasi and Jaintia Hills - Meghalaya b) Aravalli Hills - Karnataka
- c) Chanda and Bastar areas - Madhya Pradesh d) Western Ghats - Maharashtra

13. Choose the pair that is incorrectly matched.

- a) Diaphragm b) Spermicidal
- c) IUCD d) Contraceptive pill

14. Which one of the following is a barrier method of contraception?

- a) Plasmids b) Transposes
 - c) RNA d) VNTRs
15. What is commonly called mobile genetic elements?
- a) Plasmids b) Transposes
 - c) RNA d) VNTRs
16. The microbes commonly used in kitchens are:
- a) Lactobacillus and Yeast b) Rhizopus and Lactobacillus
 - c) Penicillium and Yeast d) Microspora and E. coli
17. Gynaecomastia is a common feature seen in :
- a) Turner's syndrome b) Down's syndrome
 - c) Klinefelter's syndrome d) Cystic fibrosis
18. Energy transfer from one trophic level to another is:
- a) 50% b) 100%
 - c) 10% d) 5%
19. Which of the following is a STD?
- a) Pneumonia b) Malaria
 - c) Cancer d) Trichomoniasis
20. Which of the following are also called lungs of our planet?
- a) Amazonian rain forests b) Mediterranean Basin
 - c) Western Ghats d) Himalayas
21. Which of the following organisms not fix atmospheric nitrogen?
- a) Oscillatoria b) Nostoc
 - c) Spirogyra d) Anabaena
22. On the basis of the sex chromosome shown below, the bird shown is



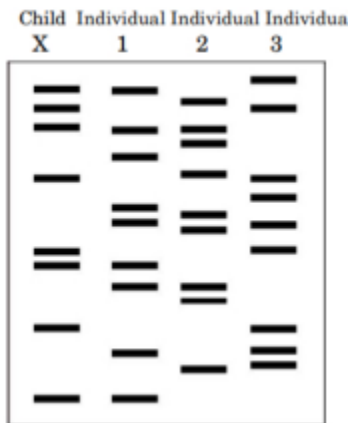
- a) Female b) Cannot be decided
- c) Transgender d) Male

23. Methanogenic bacteria are not found in:

- a) Gobar gas plant b) Activated sludge
- c) Rumen of cattle d) Bottom of water-logged paddy fields

24. Study the DNA profiles obtained as a result of DNA fingerprinting of a child X and three individuals

1, 2 and 3. Which one of the following options shows the possible parents of the child X?



- a) Only individual 3 b) 1 and 2
- c) 1 and 3 d) 2 and 3

25. Gene flow i.e. movement of genes will:

- a) Increase impact of natural selection b) Homogenized population
- c) Disturbs and decreases genetic variation d) Population degradation

26. Third generation vaccines are:

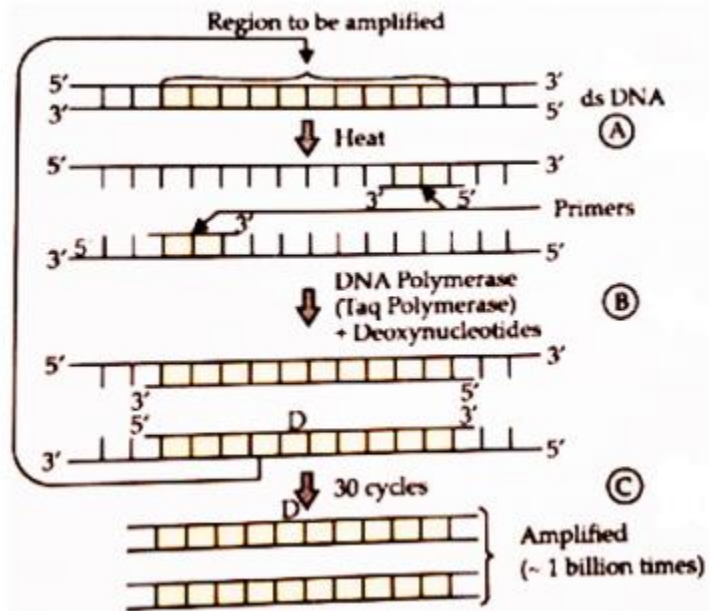
- a) Attenuated pathogen b) Monoclonal antigen
- c) Pathogen relative d) Synthetic antigen

27. When two genes are situated very close to one another on a chromosome:

- a) Hardly any cross-overs are produced
- b) Only double cross-over can occur between them
- c) No crossing over can take place
- d) The percentage of crossing over between them is very high

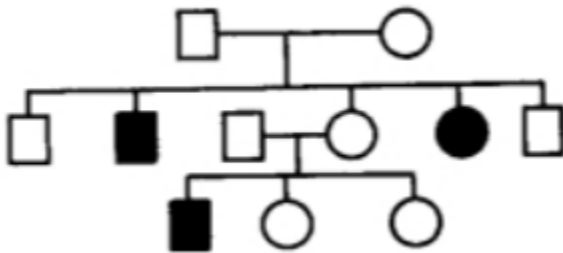
28. Figure given below represents the reactions associated with Polymer Chain Reaction (PCR).

Name the steps A, B, C in the process.



- a) A - Primer Extension, B - Annealing, C - Denaturation
- b) A - Denaturation, B - Annealing, C - Primer Extension
- c) A - Annealing, B - Primer Extension, C - Denaturation
- d) A - Annealing, B - Denaturation, C - Primer Extension

29. Study the pedigree chart given below:

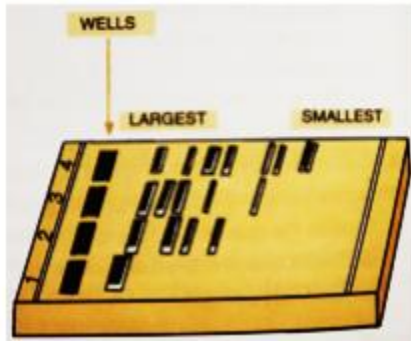


What does it show?

- a) The pedigree chart is wrong as this is not possible

- b) Inheritance of a recessive sex-linked disease like haemophilia
- c) Inheritance of a condition like phenylketonuria as an autosomal recessive trait
- d) Inheritance of a sex-linked inborn error of metabolism like phenylketonuria

30. In Gel Electrophoresis, fragments are moved from



- 1. Anode to Cathode 2. Cathode to Anode 3. Negative to Positive 4. Positive to Negative
- a) 1, 4 b) 1, 3
- c) 2, 4 d) 2, 3

ASSERTION -REASON

- a) Both A and R are true and R is the correct explanation of A.
- b) Both A and R are true but R is not the correct explanation of A.
- c) A is true but R is false. d) A is false but R is true

1.Assertion (A): Generally, a woman does not conceive during the lactation period.

Reason (R): The hormone ‘prolactin initiates and maintains lactation in a postpartum woman

2.Assertion (A): Beer and wine are called soft liquors while gin, rum, etc. are hard liquors.

Reason (R): Beer and wine are made without distillation.

3. Assertion (A): A given species may occupy more than one trophic level in the same ecosystem at the same time.

Reason (R): A sparrow is a primary consumer when it eats seeds, fruits, peas, and a secondary consumer when it eats insects and worms.

4. Assertion: Sometimes the change in allele frequency is so different in the new sample of the population that they become a different species.

Reason: When the migration of a section of the population to another place occurs by chance, it is called genetic drift.

5. Assertion (A): Contraceptives are methods to prevent unwanted pregnancies.

Reason (R): Unwanted pregnancies can only be prevented by using oral contraceptives.

6. Assertion (A): Dough used for making food such as dosa and idli is fermented by bacterial.

Reason (R): The puffed-up appearance of dough is due to the production of lactic acid.

7. Assertion (A): Duck-billed Platypus bears mammary glands.

Reason (R): They are mammary-bearing reptiles.

8. Assertion (A): Improved health facilities and better living conditions promoted an explosive growth of the population.

Reason (R): An overall improvement in reproductive health has taken place in our country as indicated by reduced maternal and infant mortality rates.

9. Assertion: BOD is a measure of the organic matter present in the water.

Reason: BOD refers to the amount of oxygen that would be consumed if all the organic matter in one litre of water were oxidised by bacteria.

10. Assertion (A): Net primary productivity is always less than Gross primary productivity in an ecosystem.

Reason (R): A considerable amount of Gross primary productivity is utilized by plants in respiration

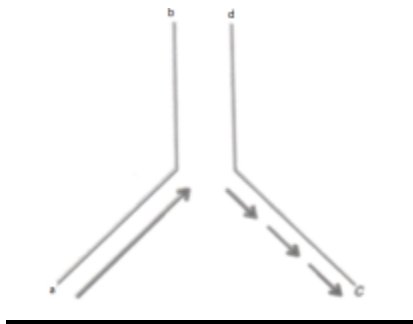
SECTION –B (2 MARKS QUESTIONS)

1. Write the functions of

i. cry IAc gene

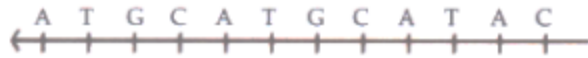
ii. RNA interference (RNAi)

2. Mention the polarity of the DNA strands a - b and c - d shown in the replicating fork given below:

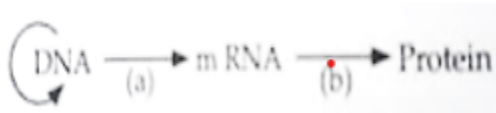


3. Write any two ways of how genetically modified plants are found to be useful?

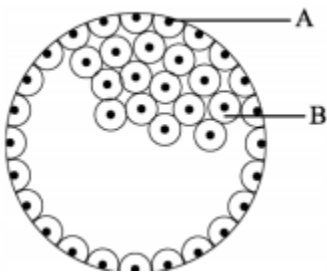
4. Write the RNA strand transcribed from the given transcription unit along with its polarity.



5. What is LAB? What is its role in human stomach?
6. What are genetically modified organisms (GMO).
7. The flow of genetic information is shown below. Name the process of (a) and (b).



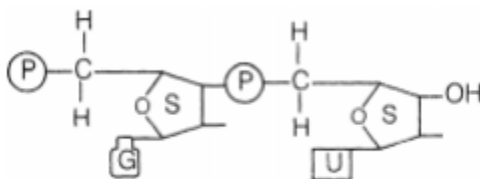
8. In the given figure, give the name and functions of parts labelled A and B.



9. Why are blue green algae not popular as biofertilisers?
10. Common yeast is known as Baker's yeast and also as Brewer's yeast. Justify.

SECTION –C (3 MARKS QUESTIONS)

1. Answer the questions based on the dinucleotide show below.



- i. Name the type of sugar to which guanine base is attached to.
 - ii. Name the linkage connecting the two nucleotides.
 - iii. Identify the 3' end of the dinucleotide. Give a reason for your answer.
2. Mention any two autosomal genetic disorders with their symptoms.
 3. Differentiate between the following inter-specific interactions in a population –

(i) Mutualism and completion. (ii) Commensalisms and Amensalism.

4. A species-area curve is drawn by plotting the number of species against the area. How is it that when a very large area is considered the slope is steeper than that for smaller areas?

5. a.) Enlist two criteria that are used to identify a region for maximum protection as Biodiversity hotspots.

b. Name any two hotspot regions in our country.

6. How would the gene flow or genetic drift affect the population? Do the population in which gene flow and genetic drift are operated obey Hardy Weinberg principle?

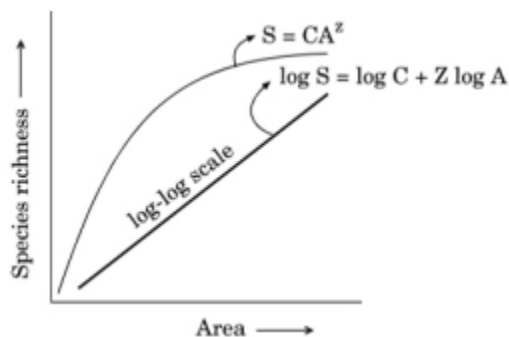
7. In your locality, if a person is addicted to alcohol, what kind of behavioural changes do you observe in that person? Suggest measures to overcome the problem.

8. State in what ways Stanley Miller stimulated the conditions of - i. Primitive atmosphere on earth.

ii. Energy source at the time of origin of life iii. Formation of organic molecules of life to prove the theory of chemical evolution.

9.. Plasmodium enters the human body through the bite of infected female Anopheles. Trace its life cycle till the onset of malaria in human.

10. Study the graphical representation of Species richness - Area relationship given below and answer the questions that follow:



a. What do S, C, Z and A represent in the given graph?

b. What will be the range value of Z line if we analyse the species-area relationship among very large areas like entire continent?

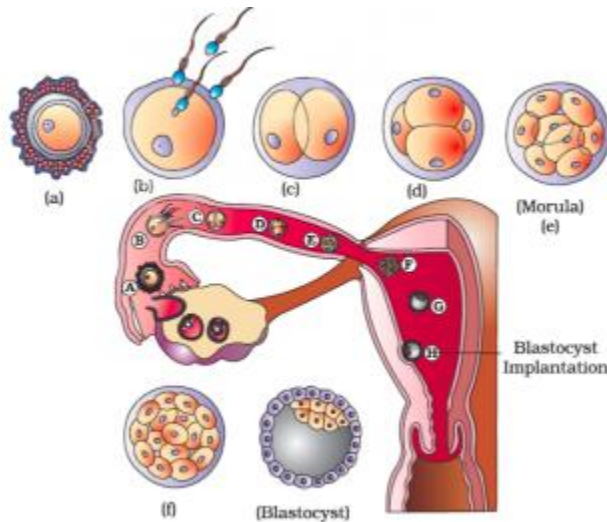
SECTION –D (4 MARKS CASE BASED)

1. Read the following text carefully and answer the questions that follow:

Reema, Jai and Ankit are suffering from autoimmune diseases of adrenal cortex, joints and thyroid gland, respectively. Their immune system failed to recognise self and non-self and started

destroying their body's own proteins. They are seeking proper medical help for their conditions but their condition cannot be cured completely.

- i. Identify autoimmune diseases of Reema, Jai and Ankit.
 - ii. Write the characterised on Reema's autoimmune condition.
 - iii. What do you think is the major cause of Jai's condition?
2. Nikita and Anita studying about fertilization and implantation. They have to represent a poster in the class on this topic so they both have made the following poster which includes all the stages starting from fertilization to implantation



- i. Describe the zygote division till the stage of blastocysts.
 - ii. Specify endocrine function of corpus luteum. How does it influence the uterus? Why is it essential?
3. Read the following text carefully and answer the questions that follow:

Siddharth is a chain smoker, he got into this habit in early adolescent due to peer pressure and gradually got addicted in this habit. It is now 20 yrs., he is into the habit of smoking since few months he is experiencing pain in chest, shortness of breathing, wheezing and chronic cough with phlegm. He sought advice of medical practitioner who diagnosed him with lung cancer.

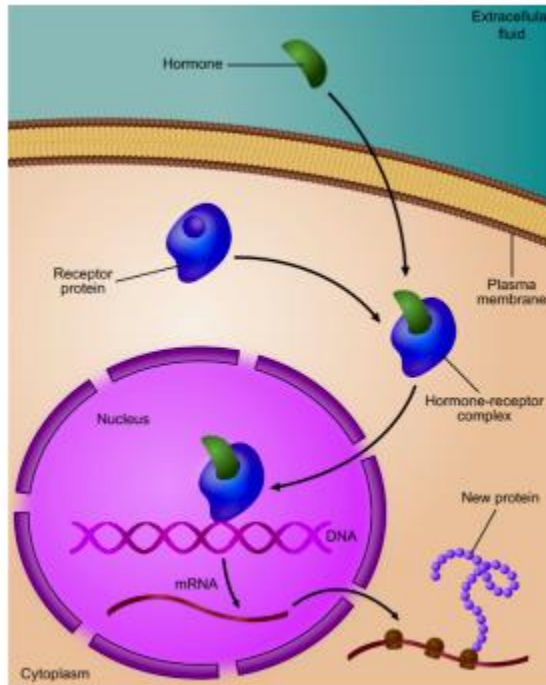
- i.) Enumerate the two properties of cancer cells.
- ii.) How is lung cancer diagnosed?
- iii.) What do you mean by carcinogen? Give some examples.

OR

Differentiate between two different types of tumours.

4. **Read the following text carefully and answer the questions that follow:**

Gene regulation is the mechanism of switching off and switching on of the genes depending upon the requirement of cells and the state of development. Gene regulation is of two types: negative and positive. In negative gene regulation, the genes continue expressing their effect till their activity is suppressed. Positive gene regulation is the one in which the genes remain non-expressed unless and until they are induced to do it. Operon model is a co-ordinated group of genes such as structural gene, operator gene, promoter gene, regulator gene which function together and regulate a metabolic pathway as a unit, e.g., lac operon, trp operon, ara operon, etc.



- i. Regulation of gene expression occurs at which the level?
- ii. What is complementary to an mRNA molecule transcribed from the lac operon contains nucleotide sequences?
- iii. Describes the control of transcription of the genes involved in the breakdown of lactose in *Escherichia coli*?
- iv. What is the function of catabolic activator protein in lac operon?

SECTION –E (5 MARKS QUESTIONS)

1. Adenosine deaminase (ADA) deficiency is an inherited disorder that damages the immune system and causes severe combined immunodeficiency (SCID). People with SCID lack virtually all immune protection from bacteria, viruses, and fungi. They are prone to repeated and persistent infections that can be very serious or lifethreatening. These infections are often caused by "opportunistic" organisms that ordinarily do not cause illness in people with a normal immune system.

- i. Mention the cause and the body system affected by ADA deficiency in humans.
- ii. Name the vector used for transferring ADA-DNA into the recipient cells in humans. Name the recipient cells.
- iii. Explain the three different approaches used in the treatment of a person suffering from Adenosine Deaminase (ADA).

2. What are the key concepts in the evolution theory of Darwin?

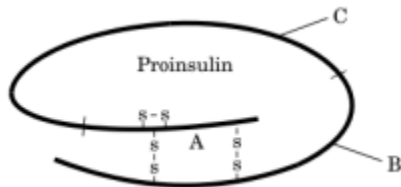
OR

State and explain any three factors affecting allele frequency in populations.

3. How is the Bt cotton plant created as a GM plant? How is it protected against bollworm infestation?

4. Describe S.L. Miller's experiment. Comment on the observations he made and his contribution towards the origin of life on Earth.

5. Insulin in the human body is secreted by the pancreas as prohormone/proinsulin. The schematic polypeptide structure of proinsulin is given below. This proinsulin needs to undergo processing before it becomes functional in the body. Answer the questions that follow:



- i. State the change the proinsulin undergoes at the time of its processing to become functional.
 - ii. Name the technique the American company Eli Lilly used for the commercial production of human insulin.
 - iii. How are the two polypeptides of functional insulin chemically held together?
6. Many secondary metabolites of plants have medicinal properties. It is their misuse that creates problems. Justify